

Ethical Consideration

In the design of Science Gallery, a booking management system, we considered the following ethical issues:

Privacy

Privacy Data Collection

- **Issue:** On the user's reservation page, some information is required, including email and name. The collection of users' personal information may raise privacy concerns.
 - **Solution:** Ensure only necessary information is collected and obtain the user's explicit consent before collection. Add text to the booking page to explain why this information needs to be collected.
 - **Likelihood/Priority:**
 - **Likelihood:** High – Users are likely to be concerned about their personal information being collected.
 - **Priority:** High – user consent and transparency are crucial for maintaining trust.

Data Storage and Processing

- **Issue:** There may be security breaches in data storage and processing that could result in user information being accessed or compromised by unauthorized persons. Since our bookings are for schools, underage data is very sensitive and needs strict protection.
 - **Solution:** Implement strict access control measures so that only registered accounts in the database can log in, and operations can only be performed after logging in.
 - **Likelihood/Priority:**
 - **Likelihood:** Medium – Security breaches are possible but preventable with proper measures.
 - **Priority:** Critical – Protecting underage data is of utmost importance.

Sharing Information

- **Issue:** Since a Science Gallery booking involves various parties (e.g., booking transportation, a teacher for navigation), some information may be shared externally, leading to potential information leakage.
 - **Solution:** Minimize the content of information shared. For example, only share program information and times when arranging a guided tour. Clarify the purpose and recipient of the sharing to the user, obtain explicit consent, and anonymize personally identifiable information before sharing.
 - **Likelihood/Priority:**
 - **Likelihood:** High – Information sharing is a common practice.
 - **Priority:** High – Ensuring user consent and minimizing data shared is essential for privacy protection.

Data Transmission

- **Issue:** When a user makes a booking, the submitted form is uploaded to the database, posing a risk of leakage during the upload process.
 - **Solution:** Use encryption protocols to secure data submitted by users during transmission.
 - **Likelihood/Priority:**
 - **Likelihood:** Medium – Data transmission can be intercepted if not encrypted.
 - **Priority:** High – Protecting data during transmission is critical to prevent leaks.

Transparency

Clarify the Purpose of Data Collection

- **Issue:** Users need to understand how their data will be handled after submission.
 - **Solution:** Provide a clear privacy policy and user agreement on the booking screen.
 - **Likelihood/Priority:**
 - **Likelihood:** High – Users expect transparency regarding their data.
 - **Priority:** High – Transparency is essential to maintain user trust.

Ensure User Awareness

- **Issue:** Users may not be fully aware of how their data is processed.
 - **Solution:** Add a feature that requires users to agree to a privacy policy and user agreement before booking.
 - **Likelihood/Priority:**
 - **Likelihood:** High – Users may overlook privacy policies without mandatory agreement.
 - **Priority:** High – Ensuring user awareness is fundamental for ethical data handling.

Provide Instructions for Using the Booking Management Dashboard

- **Issue:** Staff may not fully understand how the system collects, uses, and shares booking data.
 - **Solution:** Deliver instructions for use with the system, emphasizing the importance of data protection.
 - **Likelihood/Priority:**
 - **Likelihood:** Medium – Staff training can mitigate misuse.
 - **Priority:** High – Proper training ensures adherence to data protection policies.

Monitoring and Recording

- **Issue:** Potential misuse of data during export operations.
 - **Solution:** Record data export operations, supervise each export, and ensure the use of data is legitimate and transparent.
 - **Likelihood/Priority:**
 - **Likelihood:** Medium – Supervision reduces misuse but requires diligence.
 - **Priority:** High – Monitoring is crucial for detecting and preventing data misuse.

Honesty

Data Validation

- **Issue:** Users may submit invalid or incorrect information during booking.
 - **Solution:** Perform logical validation for key information (e.g., booking times, contact information) to ensure reasonableness and accuracy.
 - **Likelihood/Priority:**
 - **Likelihood:** Medium – Users might unintentionally or intentionally provide incorrect data.
 - **Priority:** High – Valid data is necessary for operational efficiency and reliability.

Data Auditing

- **Issue:** Incorrect data might be used to generate bookings.
 - **Solution:** Staff reviews and confirms data on the booking page before generating a valid booking.
 - **Likelihood/Priority:**
 - **Likelihood:** Medium – Human error can occur during data entry.
 - **Priority:** High – Ensuring data accuracy prevents operational issues.

Authentication

- **Issue:** Unauthorized access to the booking management system.
 - **Solution:** Only allow employees with a specific account and password to access the system.
 - **Likelihood/Priority:**
 - **Likelihood:** Low – With secure authentication measures, unauthorized access attempts are minimized.
 - **Priority:** Critical – Unauthorized access can compromise the entire system.

Inclusivity

Training & Support

- **Issue:** Staff may struggle to understand and use the booking management system.
 - **Solution:** Provide multilingual technical support and help documentation.
 - **Likelihood/Priority:**
 - **Likelihood:** Medium – Not all staff may be proficient in the system's default language.
 - **Priority:** High – Effective support ensures smooth system operation.

Feedback

- **Issue:** Users may encounter difficulties using the system.
 - **Solution:** Provide a feedback channel and regularly seek user input for improvement.
 - **Likelihood/Priority:**
 - **Likelihood:** High – Users often face challenges that need addressing.
 - **Priority:** High – Feedback is essential for continuous improvement and user satisfaction.

Multi-language Support

- **Issue:** Users may prefer to operate the site in their native language.
 - **Solution:** Offer multi-language interface options and process bookings in the user's language.
 - **Likelihood/Priority:**
 - **Likelihood:** High—diverse user base likely prefers different languages.
 - **Priority:** High – Multi-language support enhances accessibility and user experience.

User-friendly Pages

- **Issue:** Users have varying needs and preferences for web interfaces.
 - **Solution:** Design adaptable, user-friendly pages that accommodate different sizes and can be enlarged.
 - **Likelihood/Priority:**
 - **Likelihood:** High – Users have diverse accessibility needs.
 - **Priority:** High – User-friendly design is crucial for inclusivity and usability.